

In re Patent Application of:
CHARLES CARPENTER
Serial No. 09/864,918
Filing Date: 5/24/2001

Remarks

Applicant and the undersigned would like to thank the Examiner for his efforts in the examination of this application, and for the telephone interview on January 13, 2005 regarding the above referenced office action. Claims 1, 2, 6, 7, 11-13, 15, 19, and 20 remain in the case and were rejected under 35 USC 103(a) as being unpatentable over the Japanese patent publication to Kamikawa (JP 2000106520 A). Reconsideration is respectfully requested.

As illustrated with reference to Figure 2, Kamikawa appears to disclose a SAW element (3) carried on a buffer layer (4) and facing upward for receiving wire connections (6). Respectfully, Kamikawa does not teach the process of inserting and attaching a SAW die face down, in a flip-chip arrangement. Clearly, Kamikawa discloses that the SAW element (3) is mounted in a face up manner inside the cavity (21) of the package (2). As illustrated with reference to Figures 2, 3(a), and 3(b), the top surface of the SAW element is mounted on the epoxy layer (4) with bond wires (6) attached to the electrode pattern (33) on the top surface of the die and to the pads (23) of the package (2).

Kamikawa further teaches attaching the cover (1) with a seal (25) on a top surface of the package (2) and not on the recessed shelf (22) as would appear to be suggested by the Examiner. Kamikawa clearly does not teach the process of sealing a metal lid in the recess. In fact there is a teaching away from such attachment. Applicants teach the process of forming a recess in the cavity such that the walls of the recess contain the lids and the lids are sealed in the recess as illustrated in FIGS. 1 and 4 of the specification.

Clearly, Kamikawa is not directed to, nor does it teach or suggest the assembly process of an array of small dimension flip-chip SAW devices. One of ordinary skill in the art, relying on Kamikawa would not be aware of the challenging task of

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accomplishing a technique of externally fixturing the metal lids onto an array of very small dimensioned cavities holding the flip-chip SAW die, as supported by the specification and Declaration of Jack R. Chocola made of record in this application. The small dimensions of the lids associated with flip-chip SAW devices and the generally limited clearance between the packages of the array make it difficult to maintain integrity between the external fixture and the array during solder reflow. The problem of solder bridging between the lids is prevalent (see specification, page 2, last paragraph). The claimed invention calls for a forming of a recess from the first surface around the cavity such that the recess may receive the lid during handling and thus prevent solder from bridging between the lids during solder reflow of the array. Since Kamikawa neither suggests nor infers these teachings, one skilled in the art would not look to Kamikawa and if used as a reference, would not know to provide the invention as claimed. Kamikawa is nor an enabling disclosure with regard to teaching the claimed invention.

The Examiner also rejected claims 2 and 11 under 35 U.S.C. 103(a) over Kamikawa in view of Yoshihara et al. (US 5,824,177). As discussed above, Kamikawa does not teach the process of assembling an array of flip-chip SAW devices including the steps of forming a material having a first and second surface and cavities with recesses to receive the lids, and sealing the lids in the recesses over the inserted SAW dice. Since Kamikawa does not infer or suggest the claimed invention, one skilled in the art would not be aware of the prevalent solder bridging between the array of small dimensioned flip-chip SAW devices. Thus, it would not be obvious for one of skill in the art to infer from the teaching of Kamikawa to arrive at the claimed invention.

The Examiner is also asked to consider the commercial success of the invention as presented in the Declaration of Jack R. Chocola. In addition, and contrary to statements made in the above referenced office action, the Applicant has stated how the invention solves a particular problem in the art. Respectfully, one of ordinary skill in

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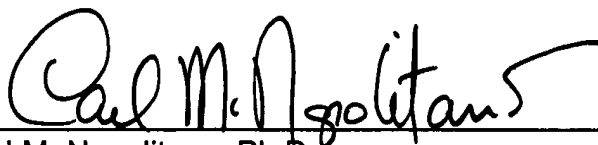
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the art would not expect the sealing of Kamikawa to perform as well as the claimed invention. The use of the recess for sealing the lid is only known because of the teachings of the Applicant. Further, both the method steps and the resulting structure distinguish over the prior art. It would only be through the teachings of the Applicant, and hindsight, that one of skill in the art would know to manufacture the SAW devices of the present invention.

Applicant respectfully submits that independent claims 1 and 19, and their dependent claims adding yet further limitations, clearly distinguish over the prior art. This application is therefore in a condition for allowance, and passage to issue is respectfully solicited. The Applicant and the undersigned would like to again thank the Examiner for his efforts in the examination of this application and for reconsideration of the claims in light of the arguments presented. If the further prosecution of the application can be facilitated through telephone interview between the Examiner and the undersigned, the Examiner is requested to telephone the undersigned at the Examiner's convenience.

Respectfully submitted,



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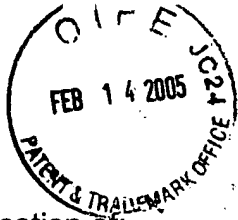
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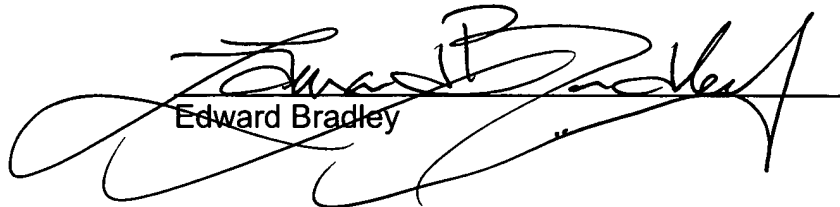
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CERTIFICATE OF MAILING

I hereby certify that the foregoing is being deposited with the United States Postal Service as first class mail in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, this 9TH day of February, 2005.


Edward Bradley